Chapter 17
Summary of Residual Effects

17 Summary of Residual Effects

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17 Summary of Residual Effects

17.1 Introduction

17.1.1 **Tables 17.1** and **17.2** provide a quick reference to the significant residual environmental effects identified in the technical chapters of this Environmental Impact Assessment (EIA) Report, as well as a cross reference to the relevant mitigation measures identified.

17.1.2 The residual effects are highlighted in **bold** where an effect is considered to be significant.

17.1.3 **Table 17.3** provides a summary of the cumulative effects of the Proposed Development in combination with other relevant proposed, consented and operational developments within the local area.

Table 17.1 - Summary of Residual Effects – Construction and Decommissioning

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Chapter 5: Landscape and Visual					
Effects on existing landscape features in the northern and southern development areas	Worst-case minor moderate not significant	Adverse	Standard best-practice construction methods. No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	Worst-case minor moderate not significant	Adverse
Effects on landscape character *Within the northern development area located in LCT7Ai Rolling Moorland Forestry*.	Worst-case moderate major significant	Adverse	Standard best-practice construction methods. No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case moderate major significant**	Adverse
Effects on landscape character *Within LCT18a East Ayrshire Plateau Moorlands extending from the southern development area approximately 2.3 km to the south-west and north-east, 1.5 km to the north and approximately 900 m south to the edge of the LCT*	Worst-case moderate significant	Adverse	Standard best-practice construction methods. No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case moderate significant**	Adverse
Visual effects – northern development area	Worst-case temporary additional minor moderate not significant	Adverse	Standard best-practice construction methods. No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	Worst-case minor moderate not significant	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Visual effects – southern development area	Worst-case temporary additional moderate major significant	Adverse	Standard best-practice construction methods. No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case temporary additional moderate major significant**	Adverse
Direct effects on landscape fabric along the B743 where underground cables electrically connect the two development areas	Not significant	Adverse	Standard best-practice construction methods. No additional mitigation.	Not significant	Adverse
Indirect effects *Across a proportion of the eastern limb of LLA to the north of the Ayr Valley, contained between Starpet Rig to the east of the B743 and Meanlour Hill to the west.*	Significant but localised	Adverse	Standard best-practice construction methods. No additional mitigation.	**Significant but localised**	Adverse
Chapter 6: Ornithology					
Muirkirk Uplands Site of Special Scientific Interest (SSSI) - Breeding Bird Assemblage: displaced due to disturbance/habitat loss.	Minor	Adverse	• Appointment of Ecological Clerk of Works (ECoW). • Pre-construction nest checks. • Breeding Bird Species Protection Plan (SPP). • Timing of works. • Construction Environmental Management Plan (CEMP).	Negligible	Adverse
Waders: displaced due to disturbance/habitat loss.	Negligible	Adverse	• Appointment of ECoW. • Pre-construction nest checks. • Breeding Bird SPP.	Negligible	Adverse

Description of Effect		Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
				• Timing of works. • CEMP		
Dungavel Habitat Management Plan Area (HMPA)		Negligible	Adverse	• Appointment of ECoW. • Pre-construction nest checks. • Breeding Bird SPP. • Timing of works. • CEMP	Negligible	Adverse
Chapter 7: Ecology						
Loss of habitat within Muirkirk Uplands SSSI.		None	N/A	Implementation of Habitat Management and Enhancement Plan (HMEP).	Minor/ Moderate	Beneficial
Loss of habitat within Dungavel HMPA.		Minor	Adverse	Implementation of HMEP.	Minor/ Moderate	Beneficial
Loss of assemblage of upland habitats.		Minor	Adverse	Implementation of HMEP.	Minor/ Moderate	Beneficial
Disturbance of otter holts and foraging/commuting otter.		Negligible	Adverse	Pre-construction surveys and obtaining licence for disturbance from NatureScot (if required).	Negligible	Adverse
Loss of roosts, foraging and commuting habitat for bats.	Northern development area	Minor	Adverse	Bat Protection Zones embedded in design mitigation. Implementation of landscape strategy.	Negligible	Adverse
	Southern development area	Negligible	Adverse		Negligible	Adverse
Habitat fragmentation and destruction of spawning habitat for fish during construction of new watercourse crossings.		Minor	Adverse	Pre-construction surveys of spawning habitat. Avoiding in-stream works during spawning and incubation periods (October to April) where spawning	Negligible	Adverse

Description of Effect		Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
				habitat identified upstream of the watercourse crossing. Design of new watercourse crossings to maintain connectivity.		
Impacts to Muirkirk Uplands SSSI		No effect	N/A	N/A	No effect	N/A
Loss of infrastructure during reversion to farmland (decommissioning)	Southern development area	Minor	Beneficial	N/A	Minor	Beneficial
Roads and hardstanding retained (decommissioning)	Northern development area	No change	N/A	N/A	No change	N/A
Loss or change of habitat which may affect protected species, potential injury, killing or disturbance of protected species during decommissioning		Negligible to Minor	Adverse	Pre-decommissioning surveys and application of best practice measures.	Negligible	Adverse
Chapter 8: Geology, Peat, Hydrology & Hydrogeology						
Impacts on Surface Water Quality		Minor	Adverse	Embedded mitigation, including minimum buffers from watercourses. Use of existing infrastructure as far as practicable. Minimising requirement for watercourse crossings. Implementation of mitigation measures outlined in CEMP. Includes committed best practice measures. Will be	Minor	Adverse
Impacts on Surface Water Flow		Minor	Adverse		Minor	Adverse
Impacts to Groundwater Quality		Minor	Adverse		Minor	Adverse
Impacts to Groundwater Flow		Minor	Adverse		Minor	Adverse
Removal and Impact on Peat		Minor	Adverse		Minor	Adverse
Peat Landslide Impact on Watercourses		Minor	Adverse		Minor	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Compaction of Soils	Negligible	Adverse	implemented by Principal Contractor. Best practice will be verified by onsite Environmental Clerk of Works (EnvCoW). Drainage strategy to be implemented. Detailed final design of watercourse crossings to be implemented. Dewatering undertaken for as short a time as practicable. Siting infrastructure to minimise peat excavation requirements. Management and storage of peat in line with the Peat Management Plan (PMP). Application of additional peat excavation/re-use protocol and hierarchy to minimise temporary storage time. Pre-construction ground investigation works. Water Quality Management Plan (WQMP) to be agreed and implemented.	Negligible	Adverse
Impacts to Designated Sites (Muirkirk and North Lowther Uplands (SPA); Muirkirk Uplands (SSSI); Blood Moss and Slot Burn (SSSI); and Greenock Mains (SSSI)).	Minor	Adverse		Minor	Adverse
Impacts to Private Water Supplies (PWS) (PWS03, PWS08, PWS13)	Moderate	Adverse	Watching brief will be employed, with excavation monitored by the onsite EnvCoW. If pipework identified this will be marked and a detailed design strategy prepared, may include laying the supply pipework beneath infrastructure or redirect.	Minor	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
			Advance warning of construction works will be provided to properties. WQMP to be agreed and implemented.		
Chapter 9: Noise & Vibration					
Construction noise including construction traffic	Scoped out of assessment	-	Production and implementation of CEMP and traffic management plan	Not significant	-
Chapter 10: Cultural Heritage					
Impacts on identified heritage assets within the Inner Study Area, including hitherto unknown archaeological remains.	Minor to negligible	Adverse	Appointment of an Archaeological Clerk of Works. Preservation in situ and adoption of buffer zones around visible remains *(e.g*. Scheduled Monument (SM) 2848 & Asset 14), which will be fenced off or otherwise marked out during construction/decommissioning. Post-felling walkover surveys undertaken in the northern development area. Archaeological monitoring (watching briefs) in areas of heightened archaeological potential and the sites of surviving historic agricultural remains (Assets 6-7, 12). Mitigation to be agreed with West of Scotland Archaeology Service and detailed in a Written Scheme of Investigation (WSI).	Negligible	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Chapter 11: Traffic & Transport					
Severance	Major/Moderate	Adverse	Implementation of Construction Traffic Management Plan (CTMP)	Minor	Adverse
Road Vehicle Driver and Passenger Delay	Major/Moderate	Adverse	Implementation of CTMP	Minor	Adverse
Non-Motorised User Delay and Amenity	Major/Moderate	Adverse	Implementation of CTMP	Minor	Adverse
Fear and Intimidation	Major	Adverse	Implementation of CTMP	Minor	Adverse
Road User and Pedestrian Safety	Minor	Adverse	Implementation of CTMP	Negligible	Adverse
Hazardous and Large Loads	Negligible	Adverse	Not Required	Negligible	Adverse
Chapter 12: Aviation and Radar					
No effects on aviation and radar interests during construction and decommissioning.					
Chapter 13: Forestry					
Social Benefits of the Proposed Development Forest Plan	Minor	Adverse	Implementation of Proposed Development Forest Plan in compliance with UK Forestry Standards including archaeological safeguards, phased felling and immediate restocking to address landscape considerations.	Minor	Adverse
Economic Benefits of the Proposed Development Forest Plan	Moderate	Beneficial	Implementation of improved tree breeding genetics to enhance timber yield and mitigate loss of commercial coniferous forest.	Moderate	Beneficial
Environmental Benefits of the Proposed Development Forest Plan	Negligible	Beneficial	Immediate replanting, phased felling, and designated retention areas, reducing long-term disruption. HMEP forest to bog peatland restoration and	Negligible	Beneficial

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
			compensatory planting. Forest Residue Management Plan (FRMP) ensures appropriate use of forest residues (brash and stumps).		
Chapter 14: Shadow Flicker					
No shadow flicker effects during construction or decommissioning.					
Chapter 15: Glint & Glare					
No glint & glare effects during construction or decommissioning.					

Table 17.2 - Summary of Residual Effects – Operation

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Chapter 5: Landscape and Visual					
Effects on landscape character *Between approximately 2 and 5 km within LCT5i Plateau Farmland, extending approximately 3 km to the south-west within LCT 7Ai Rolling Moorland Forest and extending approximately 2.5 km to the south-east of Middlefield Law, 3 km to the north-east and 1.7 km to the west of the southern development area*	Worst-case moderate major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case moderate major significant**	Adverse
Representative viewpoints during daylight hours	Worst-case major significant (Viewpoint 1 Drumclog), moderate-major significant (Viewpoint 4 Cairn Table), moderate significant (Viewpoint 8 Loudoun Hill). Other viewpoints experience non-significant effects.	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case major significant**	Adverse
Representative viewpoints during the hours of darkness	Worst-case moderate not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when	Worst-case moderate not significant	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
	(Viewpoint 1 Drumclog)		atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.		
Residential properties within 2 km of the proposed turbines in the northern development area	Worst-case major significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	**Worst-case major significant**	Adverse
Residential properties within 1 km of the southern development area	Worst-case moderate significant from Burnside and Burnfoot Farm (both financially involved), Laigh Hall, and Forkings Lodge (financially involved)	Adverse	No additional mitigation. Implementation of the landscape mitigation strategy has been considered as embedded mitigation. Detailed proposals to be agreed via a planning condition	**Worst-case moderate significant**	Adverse
Effects on settlements during daylight hours	Worst-case major significant (Drumclog). Moderate significant (Gilmourton)	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case major significant (Drumclog).** **Moderate significant (Gilmourton)**	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
	Other settlements experience non-significant effects.				
Effects on settlements during the hours of darkness	Worst-case moderate not significant (Drumclog)	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case moderate not significant	Adverse
Effects on core paths crossing the northern development area	Worst-case moderate major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case moderate major significant**	Adverse
Effects on core paths crossing the southern development area	Worst-case major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case major significant**	Adverse
Effects on core paths outwith the northern development area during daylight hours *Extending over approximately 3.2 km distance south-west of Drumclog*	Worst-case major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case major significant**	Adverse
Effects on core paths outwith the northern development area during the hours of darkness	Worst-case moderate not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than	Worst-case moderate not significant	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Extending over approximately 3.2 km distance south-west of Drumclog			5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.		
Effects on core paths outwith the southern development area during daylight hours *Paths leading towards Cairn Table*	Worst-case moderate major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process.	**Worst-case moderate major significant**	Adverse
Effects on core paths outwith the southern development area during the hours of darkness *Paths leading towards Cairn Table*	Worst-case minor moderate not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case minor moderate not significant	Adverse
Effects on roads – A70 *During daylight hours*	Worst-case minor moderate not significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Worst-case minor moderate not significant	Adverse
Effects on roads – A70 *During hours of darkness*	Worst-case minor not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case minor not significant	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Effects on roads – A71 *During daylight hours*	Worst-case minor moderate not significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	Worst-case minor moderate not significant	Adverse
Effects on roads – A71 *During hours of darkness*	Worst-case minor not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case minor not significant	Adverse
Effects on roads – B745 *During daylight hours*	Worst-case moderate major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	**Worst-case moderate major significant**	Adverse
Effects on roads – B745 *During hours of darkness*	Worst-case minor moderate not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case minor moderate not significant	Adverse
Effects on roads – B743 *During daylight hours*	Worst-case moderate major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	**Worst-case moderate major significant**	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Effects on roads – B743 *During hours of darkness*	Worst-case minor moderate not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case minor moderate not significant	Adverse
Effects on roads – Minor road crossing the southern development area *During daylight hours*	Worst-case moderate major significant	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	**Worst-case moderate major significant**	Adverse
Effects on roads – Minor road crossing the southern development area *During hours of darkness*	Worst-case minor moderate not significant	Adverse	No additional mitigation – mitigation of effects of visible aviation lighting embedded into the design of to include dimming (2000cd/200cd) when atmospheric visibility is greater than 5 km and vertical directional intensity which reduces the perceived intensity of lighting at angles below the level of the visible aviation lights.	Worst-case minor not significant	Adverse
Chapter 6: Ornithology					
Muirkirk Uplands SSSI Breeding Bird Assemblage: displaced due to operating turbines or solar farm and/or habitat loss.	Minor	Adverse	Habitat Management and Enhancement Plan	Minor	Beneficial
Dungavel HMPA	Moderate	Adverse	Habitat Management and Enhancement Plan	Minor-Moderate	Beneficial

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Breeding/foraging waders displaced due to operating turbines or solar farm and/or habitat loss.	Negligible	Adverse	Habitat Management and Enhancement Plan	Minor	Beneficial
Potential injury or mortality of all Important Ornithological Features (IOFs) due to collision risk.	Negligible	Adverse	n/a	Negligible	Adverse
Aviation lighting – all IOFs	Negligible	Adverse	n/a	Negligible	Adverse
Chapter 7: Ecology					
Injury or mortality of bats through collision with turbines or barotrauma	Minor	Adverse	Embedded mitigation with buffers around turbines to key habitat features to be calculated and implemented.	Negligible	Adverse
Shading effect on grassland habitats from solar panels in southern development area	Minor	Adverse	None	Minor	Adverse
Chapter 8: Geology, Peat, Hydrology & Hydrogeology					
Impacts on Surface Water Flow	Minor	Adverse	Embedded design and committed good practice mitigation. Implement best practice and correct storage of fuels and management plans in the event of spills. Best practice to be outlined within Operational Environmental Management Plan (OEMP) and implemented by operation and maintenance contractor. Implementation of a Drainage Strategy, to include trackside and cross-drainage.	Minor	Adverse
Impacts on Fluvial Geomorphology	Minor	Adverse		Minor	Adverse
Impacts to Groundwater Flow and Drying out of Peat	Minor	Adverse		Minor	Adverse
Impacts on Surface Water and Groundwater Quality from Chemical Pollution and Sedimentation	Minor	Adverse		Minor	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
			Regulation of watercourse crossings by the Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended (CAR), to include maintenance and removing any blockages. WQMP to be agreed and implemented. Implementation of HMEP, including peatland restoration, with aftercare and monitoring.		
Chapter 9: Noise & Vibration					
Noise from operation of the wind turbines	Not significant	Adverse	Implementation of noise mitigation strategy (embedded mitigation)	Not significant	Adverse
Operational noise from non-turbine fixed plant	Not significant	Adverse	Specification and location of plant such that noise limits are met at NSRs (embedded mitigation)	Not significant	Adverse
Chapter 10: Cultural Heritage					
Impacts on the settings of designated heritage assets and nationally and regionally significant non-designated heritage assets within the Inner and Outer Study Areas	Moderate to negligible	Adverse	Embedded mitigation measures developed in consultation with HES, including: • The removal of Scoping Turbines 3 and 7 to improve intervisibility between Dungavel Cairn (SM 2848) and possible contemporary cairns to the south. • Reduction in height of Turbine 6 to 200 m to appears prominent when beheld from the Dungavel Cairn (SM 2848).	**Moderate** to negligible	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
			• The total number of turbines reduced from 26 to 18; repositioning of remaining turbines to improve spacing between elements of the Proposed Development and open views across the site.		
Chapter 11: Traffic & Transport					
All operational traffic effects	Negligible	Adverse	Not Required	Negligible	Adverse
Chapter 12: Aviation and Radar					
Effects on MoD low flying interests (Tactical Training Area (TTA) 20T)	Significant	Adverse	Aviation lighting will be installed on 8 of the proposed 18 turbines. The lighting requirements will be agreed with the CAA, with the lights meeting the requirements set out in in Article 222 of the UK Air Navigation Order (ANO).	Negligible	Neutral
Effects on NATS (En-Route) infrastructure: Lowther Hill, Cumbernauld and Glasgow Airport Primary Surveillance Radars (PSRs).	Significant	Adverse	Mitigation measure agreed between the Applicant and NATS, likely in the form of using the Glasgow Terma radar to provide infill data.	Negligible	Neutral
Effects on Glasgow Airport infrastructure: Glasgow PSR, Instrument Flight Procedures (IFPs) and Air Traffic Control Sector Minimum Altitude Chart (ATCSMAC).	Significant	Adverse	Mitigation measure agreed between the Applicant and NATS, likely in the form of using the Glasgow Terma radar to provide the infill data. Application of an IFP condition (to be agreed).	Negligible	Neutral
Effects on Glasgow Prestwick Airport (GPA) infrastructure: IFPs and PSR.	Significant	Adverse	Mitigation measure agreed between the Applicant and NATS, likely in the	Negligible	Neutral

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
			form of using the Glasgow Terma radar to provide infill data. Application of an IFP condition (to be agreed).		
Chapter 13: Forestry					
No effects on forestry during operation.					
Chapter 14: Shadow Flicker					
Shadow flicker nuisance at all receptors.	Not Significant	Adverse	Shadow Flicker Mitigation Protocol (if required)	Not Significant	Adverse
Chapter 15: Glint & Glare					
Effect on all road receptors	Minimal to negligible	Adverse	Embedded mitigation – implementing Landscape Strategy Plan including planting/screening and, where required and appropriate, installation of temporary shade netting while vegetation is established.	Minimal to negligible	Adverse
Effect on fixed (residential) receptors: Netherwood, Burnfoot Farm, Greenockdyke, Bibblon Lodge, Laigh Hall, Middlefield	Minimal to negligible	Adverse	Embedded mitigation – implementing Landscape Strategy Plan including planting/screening and, where required and appropriate, installation of temporary shade netting while vegetation is established.	Minimal to negligible	Adverse
Effect on other fixed (residential) receptors within the study area: Forkings, Linburn, Blackside Farm	None	N/A	N/A	None	N/A
Effect on Aviation Receptors	N/A	N/A	N/A	N/A	N/A

Table 17.3 – Summary of Cumulative Effects

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Chapter 5: Landscape and Visual					
Cumulative landscape character effects	Worst-case moderate significant (LCT18a)	Adverse	No additional mitigation – consideration of landscape and visual matters was inherent in the design process	**Worst-case moderate significant (LCT18a)**	Adverse
Totality of cumulative landscape character effects	The Proposed Development would fit in with the established pattern of wind energy development and would consolidate the existing effects on landscape character that have already been brought about by these other schemes and would not extend these effects beyond the extent already introduced by the other schemes.		No additional mitigation – consideration of landscape and visual matters was inherent in the design process	No change	Adverse
Cumulative visual effects	The Proposed Development would not introduce a cumulative significant visual effect		No additional mitigation – consideration of landscape and visual matters was inherent in the design process	No change	Adverse
Cumulative sequential visual effects	The Proposed Development would not introduce a cumulative sequential significant visual effect		No additional mitigation – consideration of landscape and visual matters was inherent in the design process	No change	Adverse
Totality of cumulative visual effects	The addition of the Proposed Development would be such as to result in the overall cumulative visual effect of wind turbines being dominant or oppressive in views experienced at various points within the area.		No additional mitigation – consideration of landscape and visual matters was inherent in the design process	No change	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Chapter 6: Ornithology					
All IOFs	Negligible	Adverse	n/a	Negligible	Adverse
Chapter 7: Ecology					
Impacts to upland assemblage habitats from other developments within 2 km.	Minor	Adverse	Each development has a mitigation enhancement area that will improve the condition or restore large areas of these habitats. Minor losses are therefore compensated for, and additional habitat created or improved.	Minor/ Moderate	Beneficial
Otter - Nearby developments may affect the same otter population as they are located on watercourses that also run through the Proposed Development. Impacts may be through noise and disturbance and may need to close resting sites or holts.	Minor	Adverse	Each development will implement best practice measures to reduce or eliminate impacts and where resting sites/ holts needs to be closed licences will be obtained from NatureScot. Each development should consider the impacts from the others when determining mitigation for licences to ensure that otters conservation status is maintained.	Negligible	Adverse
Fish – the fish population in nearby developments may be affected through runoff and sedimentation or through habitat fragmentation however all nearby developments will adhere to best practice mitigation measures and design watercourse crossings to maintain fish passage.	Negligible	Adverse	N/A	Negligible	Adverse
Bats -operational impacts through injuring and mortality resulting from	Moderate	Adverse	Bat Protection Plan to be agreed prior to construction, additional mitigation	Minor	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
collision with wind turbines. There are a large number of wind farms in the local area, and while they are generally located in areas where low levels of bat activity have been recorded and development adhere to NatureScot guidance to keep standoff distances to key habitat areas there is an overall cumulative impact due to the area of the landscape occupied by wind turbines.			to include monitoring and if required, feathering based on results of monitoring.		
Chapter 8: Geology, Peat, Hydrology & Hydrogeology					
Impacts to Surface Water Quality and Flow	Minor	Adverse	Embedded design and committed good practice mitigation. Implementation of mitigation measures as outlined in CEMPs.	Minor	Adverse
Impacts to Groundwater Quality and Flow	Minor	Adverse		Minor	Adverse
Chapter 9: Noise & Vibration					
Noise from operation of the wind turbines	Not significant	Adverse	Implementation of noise mitigation strategy (embedded mitigation)	Not significant	Adverse
Chapter 10: Cultural Heritage					
Impacts on the settings of designated heritage assets and nationally and regionally significant non-designated heritage assets within the Inner and Outer Study Areas	Moderate to negligible	Adverse	N/A	**Moderate** to negligible	Adverse
Chapter 11: Traffic & Transport					
All cumulative effects	Negligible	Adverse	Not Required	Negligible	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Chapter 12: Aviation and Radar					
No cumulative effects on aviation and radar interests subject to mitigation measures agreed and put in place.					
Chapter 13: Forestry					
No cumulative effects on forestry.					
Chapter 14: Shadow Flicker					
Shadow flicker nuisance at receptors A to U, V, W and X.	Not Significant	Adverse	Shadow Flicker Mitigation Protocol (if required)	Not Significant	Adverse
Chapter 15: Glint & Glare					
No cumulative effects anticipated.					